

Antigua and Barbuda

Ex-post Evaluation of Japanese Grant Aid Project

Project for Construction of Artisanal Fisheries Facilities in Barbuda

External Evaluators: Makiko Oleynikov and Kazuo Udagawa, IC Net Limited

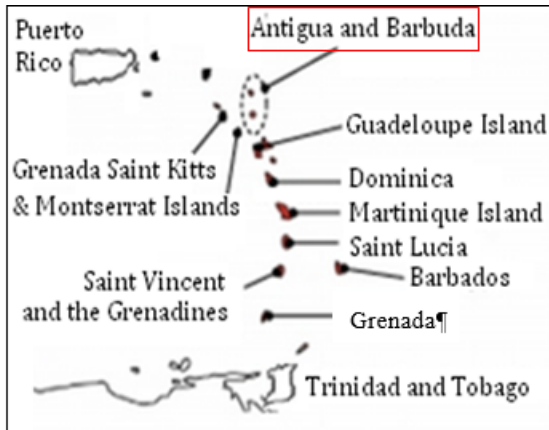
## 0. Summary

This project was carried out in Barbuda Island, Antigua and Barbuda, to develop fisheries infrastructure, including a landing jetty, mooring wharf, slipway<sup>1</sup>, and distribution facilities, such as ice making and water storage equipment. This was to improve the efficiency of its fishery sector and distribution of its marine products in a sanitary manner as an attempt to increase fishery production, thereby contributing to the development of its fishery industry by way of sustainable and effective use of its fishery resources. Both at the time of the planning and that of the ex-post evaluation, this project was highly consistent with the development policy of the country and priority areas in Japan's aid policy, and met the development needs the country had in the fisheries sector. Meanwhile, the project did not necessarily serve what local fishermen recognized as their needs, suggesting that it got started before building a firm consensus among the parties concerned. Therefore its relevance is fair. Although the project cost was within the plan, the project period exceeded the plan. Therefore, efficiency of the project is fair. The fishery facility of this project was underused, with only limited contribution made to efficiency of the fisheries sector, and utilization of the facility for landing fresh fish and/or shipping it off the island in a sanitary manner had yet to come to realization. In addition, only minor contributions were made to sustainable and effective use of fishery resources. Thus, effectiveness and impact of the project are low. In terms of operation and maintenance for this project, no specific problem has been found in technical aspects. However, the facility staffs were assigned after little consideration was given to the necessity and their competence, and there were serious problems in its operation and maintenance. In addition, some problems were observed in financial conditions of the project facility, and in maintenance of some of its equipment, therefore, sustainability of the project effects is low. In light of the above, this project is evaluated to be unsatisfactory.

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<sup>1</sup> Slipway is a declining slope into the water from the ground on which boats are launched or removed.

## 1. Project Description



Project Location



The Fisheries Complex constructed under the Project in Barbuda Island Codrington area

### 1.1 Background

Antigua and Barbuda is an island country in the Lesser Antilles in the eastern Caribbean Sea. It consists mainly of the islands of Antigua (population: approximately 84,816<sup>2</sup>), Barbuda (population: approximately 1,625<sup>3</sup>), and the uninhabited Redonda. The country's economic structure is vulnerable for two main reasons: the national economy is readily affected by the fluctuations in the number of tourists in the country, as tourism is the nation's key industry; and the country is prone to hurricanes and other natural disasters.

The number of fishers is small in Antigua and Barbuda,<sup>4</sup> and small-scale coastal fisheries are the norm. However, the vast coral sea area and the exclusive economic zone area that it enjoys point to much room for marine resources to be exploited. Queen conch<sup>5</sup> is caught in large quantities in Antigua primarily for the domestic market, while lobster is abundantly fished in Barbuda, mainly for exports. Antigua and Barbuda depend on imports for about one-third of their fishery supplies because of the people's penchant for marine products and the resultant large consumption of them. In contrast, the country exports live lobsters to the neighboring French territories of Martinique, Guadelupe, and elsewhere.

Since 1997, Japan has implemented grant aid cooperation projects in fisheries for Antigua and Barbuda to support the country with the sustainable use of marine resources.<sup>6</sup>

<sup>2</sup> An estimate in the 2011 population and housing census for Antigua and Barbuda (by the Statistics Division, the Government of Antigua and Barbuda)

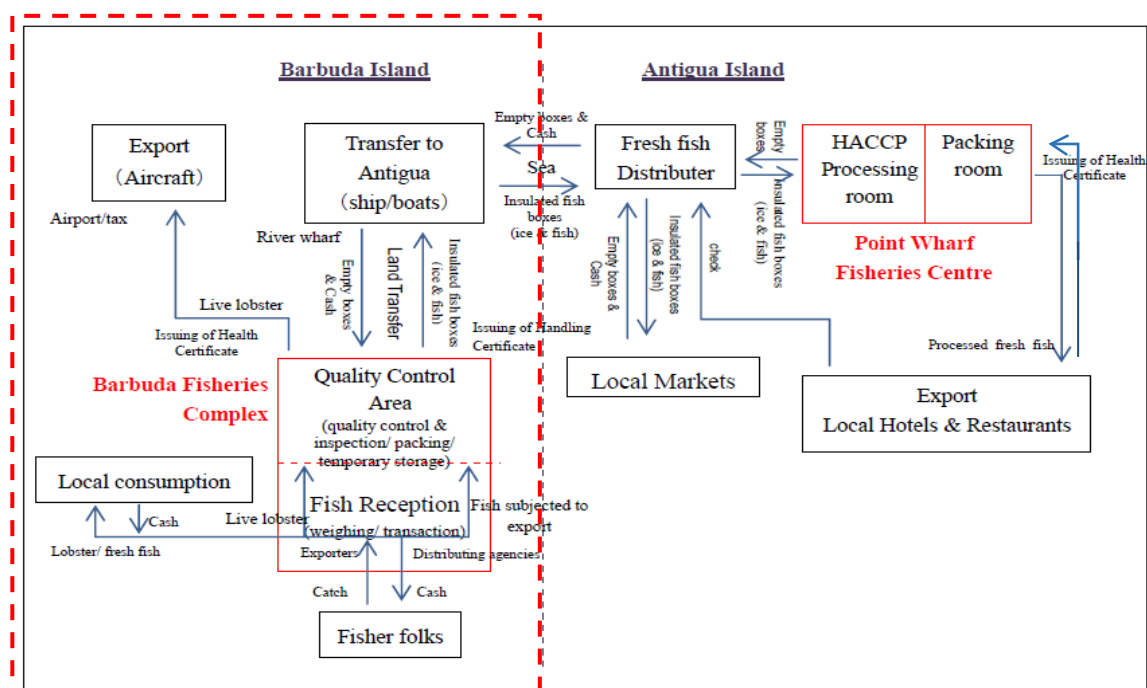
<sup>3</sup> Ibid.

<sup>4</sup> Some 900 active fishers and about 400 vessels are registered at the Fisheries Division of the Government of Antigua and Barbuda.

<sup>5</sup> Queen conch, also known as pink conch or *Strombus Gigas*, is a species of large sea snail that resembles a trumpet shall and inhabits the coastal areas of the Gulf of Mexico and the entire Caribbean Sea including the West Indies.

<sup>6</sup> In 1997, the project for the Construction of Fish Landing and Distributing Facilities in St. John's in Antigua and Barbuda was implemented. This was the first grant aid cooperation project by the Government of Japan in the country. This project improved the decrepit facilities for the landing, processing, distributing and selling of fish in the Market Wharf area in the capital city of St. John's, a hub for fishing activities in the country. The 1997 project was followed by the two-phased Project for Rehabilitation of

The Basic Design Study on the Project for Construction of Fisheries Development Center in Antigua and Barbuda, which was conducted in 2001 in response to a request from Antigua and Barbuda, identified two places--the Point Wharf area in Antigua and the Codrington area in Barbuda -- for the sites of the fisheries complex. This study confirmed the relevance of the plan to rehabilitate the fishing port functions and construct processing and testing facilities that conform to international sanitation standards in the Point Wharf area.<sup>7</sup> It also confirmed the need to construct facilities in the Codrington area for improving the sanitation management of live lobsters for export and landing fresh fish to be shipped to Antigua Island. As shown in Figure 1, the Point Wharf facilities are designed to accept fresh fish landed at Codrington facilities.



Source: Preparatory survey report

(Note) The portion surrounded with the thick broken line is the scope of this project.

Figure 1: Relationship between the Project and the Point Wharf Facilities on Antigua Island (at the time of the planning)

Artisanal Fishery from 2000 to 2001, which constructed a fisheries complex for landing, processing, distributing and selling fish at two locations in the provinces. The subsequent request from the Government of Antigua and Barbuda for a fisheries complex at two more locations—the Point Wharf area on Antigua Island and the Codrington area on Barbuda Island—prompted JICA to conduct the Basic Design Study on the Project for Construction of Fisheries Development Center in Antigua and Barbuda in March 2001.

<sup>7</sup> Exports of marine products to the territories of EU member states in the Caribbean need to meet the HACCP (Hazard Analysis Critical Control Points) requirements as stipulated by the EU. HACCP is a method for managing food safety developed by the U.S. in the 1960s. It is designed to forestall the shipment of defective products with continuous monitoring and recording at pre-identified critical points at all the processes ranging from receiving of raw materials to product manufacturing and shipment, where potential hazards can be effectively mitigated (prevented, eliminated, or reduced to an acceptable level), thereby allowing any abnormality, enabling defects to be prevented from being shipped.

It was decided that, to carry out the plan for constructing a fisheries complex at two locations as put forward in the Basic Design Study Report on the Project for the Construction of Fisheries Development Center in Antigua and Barbuda, it is appropriate to construct such a complex in the Point Wharf area first and, depending on the subsequent operational status of this complex, build a complex in the Codrington area because of limitations to the project funds, building materials, and construction period.

In 2006, the grant aid project entitled the “Project for Construction of Fisheries Center” was implemented, completing the Point Wharf Fisheries Center. Subsequently, the Japan International Cooperation Agency (JICA) conducted a preliminary study in August 2008 and a preparatory survey in May 2009, both for this project. Based on the grant agreement that was signed in June 2009 between Japan and Antigua and Barbuda, JICA implemented this project to construct a fisheries complex in Codrington on Barbuda Island.

## 1.2 Project Outline

The objectives of this project are to make fisheries more efficient, improve the sanitary distribution of catches, and increase fishery production in Antigua and Barbuda by developing fisheries infrastructure. This will include a fishery jetty, a mooring seawall, slipways, and distribution facilities including ice making storage equipment in the Codrington area on Barbuda Island, thereby contributing to the development of the fisheries industry in the country through sustainable use of fishery resources.

Grant Limit / Actual Grant Amount	1,328 million yen / 1,328 million yen
Exchange of Notes Date / Grant Agreement Date	June 2009 / June 2009
Implementing Agency	Fisheries Division of the Ministry of Agriculture, Lands, Marine Resources and Agro-Industries
Project Completion Date	August 2011
Main Contractor	Iwata Chizaki, Inc.
Main Consultants	Joint venture (JV) between System Science Consultants Inc. (Japan) and SENC 21 Co., Ltd (Japan)
Basic Design	July 2009
Detailed Design	—
Related Projects	<p><b>[Grant Aid Cooperation]</b></p> <ul style="list-style-type: none"> <li>• “Project for Construction of Fisheries Center” (2003–2004)</li> <li>• “Project for Construction of Fish Landing and Distributing Facilities in St. John's in Antigua and Barbuda” (1997–1999)</li> <li>• “Project for Rehabilitation of Artisanal Fishery, Parham” (2000–2001)</li> <li>• “Project for Rehabilitation of Artisanal Fishery, Urlings” (2000–2001)</li> </ul> <p><b>[Technical Cooperation]</b></p> <ul style="list-style-type: none"> <li>• “Dispatch of Experts: Fishery Development Adviser” (1997)</li> <li>• “Dispatch of Experts: Fishery Development Adviser” (March 2002 – March 2004)</li> </ul>

	<ul style="list-style-type: none"> <li>• “Dispatch of Experts: Fishery Technician Specializing in Fishery Product Processing and Distribution” (August—December,2006; June 2007— November 2008)</li> <li>• “Dispatch of Experts: Fishery Technician Specializing in Fishery Product Processing and Distribution” (January 2010— January 2012)</li> <li>• “Caribbean Fisheries Co-Management Project” (2013–2018)</li> </ul> <p><b>[Other Bilateral and Multilateral Donors]</b></p> <ul style="list-style-type: none"> <li>• “Organizational Strengthening of Fisheries Administration, Construction of Codrington Fisheries Center, etc.” (Canada, 1989)</li> <li>• “CARICOM Fisheries Resource Assessment and Management Program” (Canadian International Development Agency and the Caribbean Community, 1991)</li> <li>• “Resource Management and Development Program” (Caribbean Regional Fisheries Mechanism, 2001)</li> <li>• “Technical Cooperation Program” (UN Food and Agriculture Organization (FAO), 2001)</li> <li>• “Technical Assistance Program” (Cuba, 2007)</li> </ul>
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## 2. Outline of the Evaluation Study

### 2.1 External Evaluators

Makiko Oleynikov, IC Net Limited

Kazuo Udagawa, IC Net Limited

### 2.2 Duration of Evaluation Study

Duration of the Study: September 2014— July 2015

Duration of the Field Study: February 8—20, 2015; May 24— June 1, 2015

## 3. Results of the Evaluation (Overall Rating: D<sup>8</sup>)

### 3.1 Relevance (Rating: ②<sup>9</sup>)

#### 3.1.1 Relevance to the Development Plan of Antigua and Barbuda

At the time of the planning of this project, in Antigua and Barbuda, fisheries were billed as a key industry that takes advantage of domestic resources and promotes national economic independence in the Manifesto 2004, which was formulated in 2004 as the national development policy and called for economic development through industry diversification. In addition, the Antigua and Barbuda Fisheries Development Plan 2006–2010 set out the goal of supporting the national economy with the sustainable use of resources. To achieve this goal, it called for the following: (i) developing fishery infrastructure for harvesting, distributing and selling marine products; (ii) increasing the

<sup>8</sup> A: Highly satisfactory; B: Satisfactory; C: Partially satisfactory; D: Unsatisfactory

<sup>9</sup> ③: High, ② Fair, ① Low

supply of animal protein by increasing catches; and (iii) improving the fishery capacity and revitalizing the activities of artisanal fishers.

At the time of the ex-post evaluation, the goal of supporting artisanal fisheries in ways to encourage the entrepreneurship of young people and increasing the number of fishers was sought among other goals of Manifesto 2014, the national development policy that the government of Antigua and Barbuda formulated in 2014. The country's Fisheries Development Strategy for 2011–2015 sets out a total of 14 measures, including making effective use of the underutilized marine resources, developing fishery infrastructure, and bolstering fishers' organizations. Therefore, this project was highly relevant to the country's development plan at the times of both the planning of this project and the ex-post evaluation.

### 3.1.2 Relevance to the Development Needs of Antigua and Barbuda

At the time of the planning of this project, the Codrington area on Barbuda Island, despite being a key fishery hub that accounts for 80% of the island's fishing boats, lacked both fishery infrastructure facilities such as landing and mooring facilities and slipways, and fishery auxiliary facilities such as fishing gear lockers, fishing gear sales outlets and workshops, making efficient operations difficult. A lack of facilities that allowed for proper sanitation management of live lobsters for export was raising concerns about exports to the European zone, which imposes strict sanitation standards.

It was recognized that there was much need for transporting fresh fish from Barbuda Island to the main island of Antigua, which was characterized both by great demand for high-grade fresh fish and by concerns about depleting fish resources around the island. Furthermore, it was predicted that the need for shipping fresh fish under sanitary control from Barbuda Island to Point Wharf on Antigua Island would be further increased after the Point Wharf fisheries complex began to export fresh fish to the European zone. However, fish resources remained underutilized because Barbuda Island lacked appropriate distribution facilities, making it difficult to preserve the freshness of catches. It was considered desirable to diversify fisheries that depended too much on lobster fishing with regard to sustainable use of resources. In short, there was much need for achieving efficient fisheries, sanitary distribution of catches, and fishery diversification that involves a shift from lobsters to fish at the time of the planning of this project.

At the time of the ex-post evaluation, there was a continued need for more efficient fisheries and sanitary distribution of catches for Barbuda Island. The need to diversify fresh fish catching and ship fresh fish to Antigua Island remained unaddressed even after the completion of this project. The main reason for this is that fishers of Barbuda Island have an insufficient understanding of both the Fisheries Division of the Ministry of Agriculture,

Lands, Marine Resources and Agro-Industries of Antigua and Barbuda (hereinafter referred to as “Fisheries Division”) and of the above-mentioned need that JICA predicted at the time of the planning of this project, as later explained in the subsection on project effectiveness.

Therefore, although the need to implement this project existed at the time of the ex-post evaluation in the context of promoting fisheries in Antigua and Barbuda, the need for fishery diversification that involves a shift to fresh fish catching has not been sufficiently shared by local fishers.

### 3.1.3 Relevance to Japan's ODA Policy

At the time of the planning of this project, fisheries, Japan’s assistance policy for Antigua and Barbuda<sup>10</sup> stated that cooperative relations between the two countries, which share common interests in the sustainable use of marine life resources, are important for Japan, and the policy set the fisheries, fishing environment, disaster prevention, and poverty reduction as the priority sectors for Japan’s assistance for Antigua and Barbuda. In addition, the “New Framework for Japan-CARICOM Cooperation for the Twenty-first Century,” which was agreed on at the first Japan-CARICOM Ministerial-level Conference in 2000, identifies tourism, fisheries and agriculture as one of the seven priority sectors for Japan’s assistance policy for Antigua and Barbuda.<sup>11</sup> Therefore, this project is highly relevant to Japan’s ODA policy for Antigua and Barbuda at the time of it being planned.

### 3.1.4 Appropriateness of the Design and Approach of This Project

This project has yet to prove that it is highly effective; as described in 3.3 and 3.5, fresh fish catching has not been practiced as this project envisaged; consequently, they have not been shipped to Antigua Island or exported to the European zone. This project also faces a few major problems with its sustainability: excessive number of personnel, the employment of underqualified people, and the practical failure to collect fees from the users of the facilities. As major factors behind these problems, the following issues regarding the design and approach can be identified:

- Though a number of consultations were held during the preparation of the project, most of the local fishers have yet to fully understand the need to protect lobsters through fishery diversification. In fact, they are reluctant to embark on the full-fledged catch of fresh fish, which entails strict operational conditions and large investment in fishing gear, among other requirements; many fishers gain

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<sup>10</sup> As specified in the country-specific ODA data book of FY2009.

<sup>11</sup> The seven priority sectors are (i) good governance, (ii) poverty reduction, (iii) environment and disaster reduction, (iv) development of small and medium enterprises, (v) tourism, fisheries and agriculture, (vi) trade and investment promotion, and (vii) information and communication technology.

sufficient income from lobster fishing alone. As a result, they shy away from fresh fish catching that takes advantage of this project. In other words, the facilities are not being used as planned. When this project was being planned, the feelings of these fishers were not taken into account. It is safe to say that the feasibility of fresh fish catching was not sufficiently studied.

- The management of the facilities under this project was supposed to be undertaken by the fisheries office of the Barbuda Council under a technical cooperation scheme whereby technical staff at the Fisheries would be trained.<sup>12</sup> The problem is that the Council has yet to share the Fisheries Division's recognition of the purpose of and the background to this project. That includes a sense of urgency in the face of depleting resources and the critical nature of not meeting sanitation standards in the EU zone, as well as the need to collect fishery statistics and diversify fisheries<sup>13</sup>. Despite being part of the Government of Antigua and Barbuda, the Council is politically independent to the extent that it can make decisions and allocate the budget at its discretion. This makes it impossible for the Fisheries Division to intervene in the Council's personnel affairs and budget allocations. For these reasons, the Fisheries Division cannot interfere with the Council's personnel and budget spending, resulting in a lack of leadership on the part of the Fisheries Division has left much to be desired regarding facility management (see "3.5 Sustainability").

The basic concept of this project was defined in the basic design study report on the preceding grant aid project formally known as the Project for Construction of Fisheries Center in 2003–2004. However, despite the fact that there were **several** consultations with the local fishers, it was insufficient to gain their firm consent to diversify their fishing methods and the basic design study failed to take into account the autonomous nature of the Barbuda Council. It is reasonable to conclude that it was necessary to elucidate in detail the roles and responsibilities of all of the stakeholders particularly the scope of authority and responsibility of the Fisheries Division and the Council.

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<sup>12</sup> Barbuda Island is the dependency governed by the Barbuda Council. Dependencies constitute local administrative units of Antigua and Barbuda. The Barbuda Local Government Act gives the Barbuda Council the right to manage fisheries resources within a three mile radius around Barbuda. It also allows the Council to collect all fees from fishing related activities. This would include all fees collected as a result of activities around the fisheries complex – sale of ice, rental fees, etc. Thus the island is given a high-level of autonomy.

<sup>13</sup> According to an interview with the chairman of the Barbuda Council during the field study, who was the chairman of the Agriculture Committee who was in charge of the Fisheries facility for two years before assuming the Council Chairman position in March of 2015, he did not understand that an important objective of this project was to ship fresh fish under sanitary control outside the island; nor did he share concerns that the fishery facilities were underutilized.



This project was highly relevant both to the policy of Antigua and Barbuda at the times of its planning and the ex-post evaluation and to the development needs of the fishery sector. However, it is not necessarily relevant to the needs of local fishers. It could be said that this project was launched before a common recognition was adequately shared. This project was partly irrelevant to Antigua and Barbuda's development needs at the times of both appraisal and ex-post evaluation. Therefore its relevance is fair.

### **3.2 Efficiency (Rating: ②)**

#### **3.2.1 Project Outputs**

Table 1 shows the planned and actual outputs of this project. All the outputs on the part of the Japanese side have been produced as planned. Interviews with officials at the Fisheries Division and field inspections indicate no problems with the quality of the facilities and equipment, suggesting that the specifications are appropriate on the basis of the purpose of use.

The planned outputs on the part of Antigua and Barbuda include the following: gates and fences in and around the site, a power distribution line, a water distribution main, and a telephone trunk line to the site, office equipment, furniture, cleaning equipment, garbage containers, etc. within the site and planting. Of these planned outputs, beds and bedding in the accommodation rooms have not been provided. According to the head of the Fisheries Division, there was no prospect of this output being funded by government budget allocations at the time of the ex-post evaluation, although he had already requested such allocations.

Table 1: Planned and Actual Outputs

Planned	Actual
<b>[Outputs by the Japanese side]</b>	
1. Civil works (1) Landing jetty: 3.5 m in width, 40 m in length (for catch landing and resupply for small fishing boats) (2) Mooring wharf: 3.0 m in width, 37 m in length (for mooring of small fishing boats) (3) Slipway: 4.5 m in width, 20 or 16 m in length (sloping tracks for pulling up small fishing boats for repairs) (4) Perimeter earth retaining wall: 0.9–1.9 m in height, approximately 340 m in length (protection against storm surges and wind waves from the lagoon side of the site) (5) On-site earth retaining wall: 1.6–1.9 m in height, approximately 220 m in length (protection of the buildings against storm surges) (6) Wastewater settling basin: 300 m <sup>2</sup> in area (waste water settling and purification) (7) On-site road and rainwater drainage channel	As planned
2. Building works (1) Administration and fish handling building: a two-story building with a floor area of 682 m <sup>2</sup> (including a space for handling fresh fish, an office room, a training room, an ice maker with a capacity of 1 ton per day, an ice house with a capacity of 2 tons, cold storage with an area of 4.8 m <sup>2</sup> , and a machine room) (2) Fishermen support building: a one-floor structure with a floor area of 144 m <sup>2</sup> (including fishing gear lockers, a fishing gear sales outlet, and a fishing gear repair area) (3) Workshop: a one-floor structure with a floor area of 65m <sup>2</sup> (including a space for outboard engine repair and equipped with an emergency power generator) (4) Fishermen’s lavatory: a one-floor structure with a floor area of 52 m <sup>2</sup> (equipped with shower) (5) Wastewater treatment facility (including an aeration tank and contact processing tank) (6) Garbage disposal areas, building exterior, and exterior facilities	As planned
3. Main equipment (1) Fish handling equipment: an overhead crane, bin carts, platform scales and fish trays, catch sorting and inspection tables, fish pallets, insulated fish boxes, a trolley jack, and a high-pressure water floor washer (2) Testing and repair equipment: a water quality testing kit, repair tools, and a chain hoist (3) Fishermen training and administrative equipment: audio-visual equipment, meeting/class room desks, meeting/class room chairs, and a VHF marine radio	As planned
<b>[Outputs by the Antigua and Barbuda side]</b>	
(1) Gates and fences in and around the site (2) A power distribution line, a water distribution main, and a telephone trunk line to the site (3) Office equipment and furniture (4) Cleaning equipment, garbage containers, etc. within the site (5) Planting	As planned except for furniture

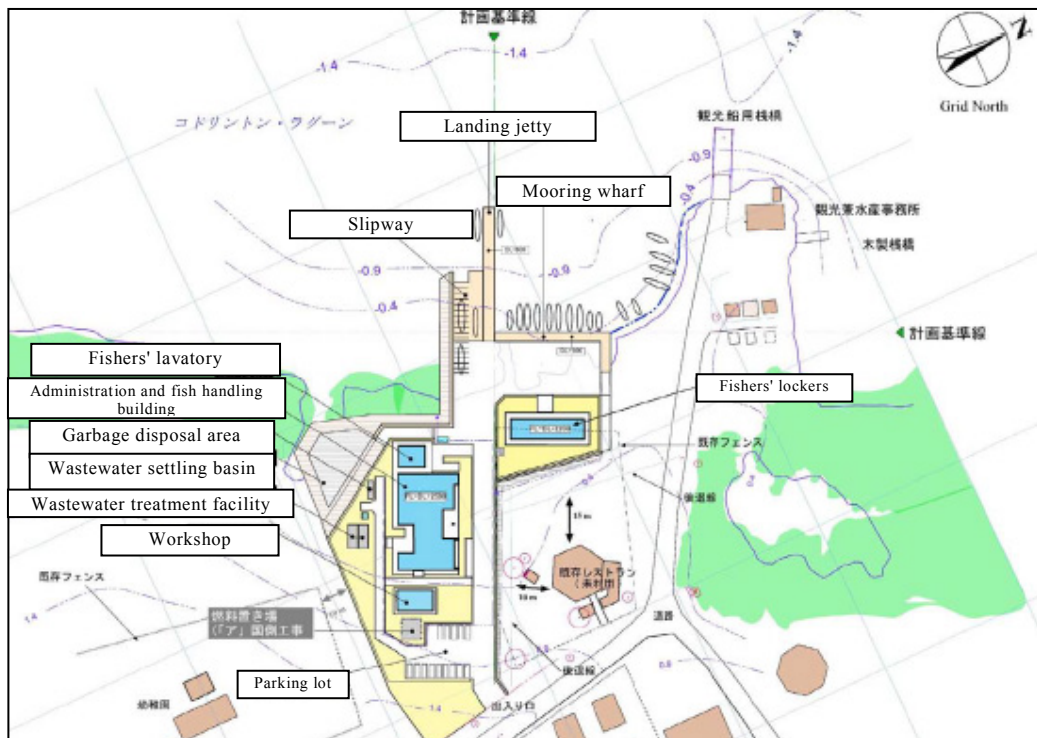
Source: Materials provided by JICA and the responses to the questionnaire by the Fisheries Division of the Government of Antigua and Barbuda



Entrance to the fish handling room of the fisheries facilities (at the time of the ex-post evaluation)



Weight measuring and individual inspection of lobsters (at the time of the ex-post evaluation)



Source: Materials provided by JICA

Figure 2: Layout Plan of the Fisheries Facilities

### 3.2.2 Project Inputs

#### 3.2.2.1 Project Cost

The actual project cost was within the planned cost. While the planned total project cost was 1,340 million yen (1,328 million yen for the Japanese side and 12 million yen for the Antigua and Barbuda side), the actual cost was 1,286 million yen (1,279 million yen for the Japanese side and 7 million yen for the Antigua and Barbuda side), representing 96% of the planned cost. The actual cost on the part of the Japanese side was some 49 million yen lower than the planned figure, largely because of efficient competitive biddings. The actual

cost on the part of Antigua and Barbuda was also lower because beds and bedding for the accommodation facility have not been provided, as discussed earlier. It is estimated that the actual total project cost would have been within the planned cost even if the outputs on the part of Antigua and Barbuda had been produced as planned because the cost borne by the Antigua and Barbuda side was small.

Table 2: Comparison of the Planned and Actual Project Costs  
Unit: million yen

	Planned	Actual
Japanese side	1,328	1,279
Antigua and Barbuda side	12	7
Total	1,340	1,286

Source: Materials provided by JICA and the Fisheries Division

### 3.2.2.2 Project Period

While the planned project period was 24 months, including the periods of the detailed design and bidding,<sup>14</sup> the actual project period was 25 months from June 2009 to July 2011. The actual period was longer than planned, representing 104% of the planned period.<sup>15</sup> As measured in days, the difference was only four days, with no major operational impact.

Although the project cost was within the plan, the project period exceeded the plan. Therefore, efficiency of the project is fair.

## 3.3 Effectiveness<sup>16</sup> (Rating: ①)

### 3.3.1 Quantitative Effects (Operation and Effect Indicators)

Table 3 shows the planned and actual values of the operation and effect indicators. The effectiveness was evaluated by the use of the following operation indicators: preparation time for operation; landing time; volume of ice production; the number of sanitary certificates issued (additional indicator); the number of sanitization certificates issued (additional indicator); and the number of times of holding training for fishers (additional indicator). In addition, the volume of fresh fish transported sanitarily to Antigua Island and the export volume of live lobster (auxiliary indicator) were established as effect indicators.

<sup>14</sup> Although the Ex-Ante Evaluation Table set the total period at 19 months, including the durations of the detailed design and bidding, the preparatory survey report set the total period at 24 months (including a work period of 19 months). The work supervision was conducted based on this 19-month period. The Fisheries Division also recognized that the work period was 19 months. It is thus reasonable to believe that the 19-month project period as stipulated in the Ex-Ante Evaluation Table actually indicated the work period only. Therefore, the external evaluators have concluded that the project period at the time of the planning of this project was 24 months.

<sup>15</sup> The work completion date was July 6, 2011, meaning that the project lasted four days longer than the planned 24-month period that started on June 3, 2009, when the Exchange of Notes was signed.

<sup>16</sup> Sub-rating for Effectiveness is to be put with consideration of Impact.

Table 3: Planned and Actual Values of Operation and Effect Indicators

	Baseline	Target	Actual	Actual
	2009	2013	2013	2014
	Baseline year	2 years after completion	2 years after completion	3 years after completion
<b>Operation indicators</b>				
1. Preparation time for operation	About 9 mins/time/boat	To shorten	—	5 of 7 fishers answered it was shortened
2. Landing time	About 19 mins/time/boat	To shorten	—	4 of 7 fishers answered it was shortened.
3. Volume of ice production (***)	0 ton/year	More than 106 tons/year	118.21 tons/year	34.34 tons/year
4. No. of health certificates issued (*)	More than 0 per year	More than 190 per year	47 per year	41 per year
5. No. of sanitization certificates issued (*)	More than 0 per year	More than 140 per year	0 per year	0 per year
6. No. of times of training for fishers (*)	1-3 times	6-8 times	8 times	10 times
<b>Effect indicators</b>				
7. Volume of fresh fish transported sanitarily to Antigua Island	0 ton/year	More than 19 tons/year	0 ton/year	0 ton/year
8. Export volume of live lobster (**)	44.9 tons/year (2007)	—	11.3 tons/year	11.4 tons/year

Sources: materials provided by JICA and Fisheries Division

(Notes)

- \* Although these indicators are not included in the ex-ante evaluation table, some of the indicators presented at the time of the cooperation preparation survey were added as indicators for judging the effectiveness.
- \*\* This was added by the evaluators as an auxiliary indicator.
- \*\*\* This is an estimate based on the actual operating time and the equipment capacity.

Herein the status of use of each facility will be arranged and results analyzed will be described based on the operation and effect indicators concerning the efficiency of fisheries; the distribution of catches under sanitary conditions; the strengthening of fisheries administration; the introduction of other types of fisheries than lobster fishery; and the transport of fresh fish off the island. To measure the effect and impact of this project, a beneficiary survey<sup>17</sup> was conducted to collect and analyze information, covering people engaged in fisheries on Antigua Island and Barbuda Island, fishers' associations, facilities workers other than fishers, retailers and wholesalers, exporters, and residents in the Codrington area.

<sup>17</sup> Information was collected as follows: Of the 44 beneficiary fishing boats (among the boats covered by this project, those that have been registered as fishing boats at the Barbuda Fisheries Office at the time of the ex-post evaluation), the captains of ten boats were interviewed by the use of questionnaires; a group interview with fishers and owners of fishing boats, including those other than captains (32 people (31 men, 1 woman); one interview); interviews with leaders of fishers' associations on Barbuda Island (2 people; men only); an interview with a leader of a federation of fishers' associations on Antigua Island (1 person; man); individual and group interviews by type of job (10 people; 6 men, 4 women); interviews with business operators on Barbuda Island and Antigua Island by the use of questionnaires (3 people; men only); and interviews with residents in the Codrington area (21 people; 2 men, 19 women).

Table 4: Status of Use of Facilities (At the Time of the Field Survey)

Landing pier:	- Of the 35 fishing boats covered by this project at the time of the planning (44 boats at the time of the ex-post evaluation), only 7 to 9 boats use the pier (about 20% of the planned number). In addition, fishing boats whose base is in another district on the island have not used it. This is because fishers do not want to pay the charge for using the pier.
Mooring wharf:	- At the time of the field survey (in February), 80% of the fishing boats in the Codrington area were moored not on the wharf but on shores outside or far from the wharf. This is mainly because the wharf is dangerous between February and July due to strong seasonal winds or because fishers do not want to pay the mooring charge. The utilization rate of the wharf is about half of the planned rate.
Slipway:	- The slipway has not been used so much because, in rough weather, it is less time-consuming and costly for fishers to go to the uploading site by car and pull up their fishing boats than to take their boats and move them to the slipway. The utilization rate at the time of the field survey is about 30%. Because many fishers left their fishing boats along the slipway, gates were installed to restrict the utilization.
Control/handling building:	<ul style="list-style-type: none"> <li>- It has been used three days a week when Cessna planes arrive to export lobster. Because no fresh fish is unloaded, the processing equipment has not been used for fresh fish.</li> <li>- Because of frequent blackouts, the ice machine and the refrigerator have been used irregularly. The generator has been installed in the building, and is used when there are blackouts.</li> <li>- Although the ice machine is not used so much to prevent trouble due to a change in electric voltage, trouble still occurs. The refrigerator installed for fresh fish has not been used because no fresh fish has been unloaded.</li> <li>- The training room has been used daily for arrangements by fisheries facilities staff. Eight to ten times a year, it is used for training that the Fisheries Division holds with NGOs concerning the conservation of resources and the environment. In addition, it is used for meetings of the Barbuda Council Agriculture Committee once or twice a month and for various public meetings.</li> </ul>
Fisher's lockers:	- Except for the two sections used by the Fisheries Division, 21 among the 24 sections have been used in the fishers' lockers. However, charges are often in arrears. This is because the sections can be used if the charge is paid afterwards.
Workshop:	- Although the workshop has been used every day to put air into scuba tanks, it has not been used for the main purpose – repairing outboard engines. No repair equipment has been used because conditions for lending have not been established. The rental spaces for selling fishing tools have not been used because the rent is high and the demand is low.
Fishers' lavatory:	- It is used when the facilities are open (8:00 to 16:00).
Overhead crane:	- It is used about once a week to load or unload sea freight or equipment.

#### (1) Status of use of facilities

As shown in Table 4, it cannot be said that the facilities as a whole have been used fully. The utilization rates of the facilities for mooring fishing boats, preparing operation, landing fish, and repairing fishing boats are less than half of the planned rates. This is mainly because of the following: fishers do not want to pay charges for using facilities; some

fishing boats are not moored in the Codrington area in some seasons because of seasonal winds; and conditions for lending repair equipment have still not been established. Although the fishers' lockers have been used frequently, according to an interview with the Facility Director, charges are often in arrears. The facilities for handling goods and making ice have not been used so much because fresh fish is not unloaded, as described below. The training room has been used for the fisheries facilities staff's daily arrangements and training and for public meetings.

### (2) Improvement of fishery efficiency

The preparation time for operation and the landing time were expected to be shortened by the use of the landing pier constructed by this project. With regards to "landing time" and "operation time," although quantitative data could not be gained as to how much the two indicators have been shortened, compared with the target value (to shorten), 4 of the 7 fishers using the pier answered that the preparation time for operation "shortened" and 5 of them answered that the landing time "shortened." The other fishers answered "no change." Therefore, it is fair to assume that the efficiency of fishery has improved to some extent by the use of the pier. However, the ratio of users of the pier is only 20% of the planned ratio (see Table 4), and the degree of achievement is less than 20% of all the fishing boats covered by this project (44 boats).

### (3) Distribution of catches under sanitary control

In this project, catch was expected to be distributed under sanitary conditions by using ice and handling goods in a sanitary control area. The indicator "volume of ice production" was 118 tons in 2013 and 34 tons in 2014, compared to the target value of more than 106 tons/year. In 2014, ice was not produced for six months due to malfunctions. Although ice was planned to be used for fresh fish, they are hardly caught and the demand for ice is low. Ice is sold also for local people's household use. Although the refrigerator is used for fresh fish, it has not been used because there is no demand. When the Ministry of Agriculture's Chemicals and Food Technology Division examined the water in 2015, the Ministry confirmed that the quality of tap water was good.

The Fisheries Division issues health certificates when catches are exported under sanitary conditions and issues health certificates when fresh fish is transported to Antigua Island. Although more than 190 health certificates were planned to be issued per year, the actual number is 40 to 50 per year, less than 30% of the planned number. This is because the demand for the export of live lobster, which requires health certificates, decreased owing to the impact of hurricane damage on tourism in neighboring countries. In addition, with regards to the indicator "number of sanitization certificates issued," although more

than 140 sanitization certificates were planned to be issued for the transport of fresh fish off the island, the actual number is zero because no fresh fish have been transported.

Although the standards for export to the European bloc, in particular the neighboring French Caribbean countries of Martinique and Guadalupe, have become stricter, the export of lobster can be continued because facilities that meet the minimum requirements were constructed under this project. Therefore, it is fair to say that the export would have been impossible if this project had not been carried out.<sup>18</sup> Health certificates have been issued for the facilities constructed under this project, and sanitary distribution of catches and management of some resources have been carried out.<sup>19</sup> However, the achievement of the expected goals is limited.

Before this project was carried out, unloaded lobster were put under the scorching sun or transported after being packed simply, resulting frequently in sudden death.<sup>20</sup> Sometimes all lobsters were dead. After this project was carried out, it has been possible to pack them at an air-conditioned indoor workplace. As a result, most lobsters can be transported live, resulting in a decrease in the death rate.

In this way, this project has enabled the appropriate sanitary control of lobster and the continuation of export to the European bloc. With regard to fresh fish, however, there is no distribution of catches under sanitary conditions because of lack of landing. Therefore, the effect of this project is low concerning the distribution of catches under sanitary conditions.

#### (4) Transport of fresh fish off the island

This project planned that other types of fisheries than lobster fishery would be introduced to the fisheries in Barbuda Island. It was planned that fresh fish products under sanitary conditions would be transported to Antigua Island to export them to the European bloc, and subsequently, some of them would be exported to other markets.

Although this project's fisheries facilities mainly deal with lobster, there is no record about the volume of catches, and only the volume of exported lobster has been recorded.<sup>21</sup> With regard to the indicator "volume of exported lobster," the volume of exported live lobster decreased from 30 tons/year in 2012 to 11 tons/year in 2014.<sup>22</sup> This is mainly

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<sup>18</sup> Fresh fish cannot be exported until Antigua and Barbuda pass the European health authorities' inspection as to whether the country satisfies HACCP, the export standards in Europe. However, because lobster is live shellfish and its freshness must be guaranteed, it can be exported even before the inspection.

<sup>19</sup> Lobsters that are smaller than the minimum size specified by the Fisheries Division's export standards or that are females in a breeding season are excluded.

<sup>20</sup> Lobsters sometimes die suddenly because of excessive pressure, suffocation, or exposure to tap water.

<sup>21</sup> The volume of lobster consumed on the island is unknown.

<sup>22</sup> Although conch shellfish had been caught and exported until 2012, it has not been exported through this project's facilities since 2013 because the EU's health control regulations became stricter.



because the demand for lobster from tourists to neighboring countries decreased.<sup>23</sup>

According to interviews with such people as fishers, personnel in the Fisheries Division, and the Barbuda Council's officer in charge of fisheries, fresh fish is not unloaded by the use of this project's fisheries facilities mainly because many fishers are satisfied with the existing lobster fishery and hesitate to do coastal fisheries by reducing lobster fishery, which enables them to gain revenues without fail. Other reasons include the following: it is necessary to invest in fishing tools; the ice machine and the refrigerator often cannot be used because of unstable power supply; there is no appropriate transport means to Antigua Island; and there are no clear prospects for distribution channels and profits.<sup>24</sup>

If lobster resource declines or if catches of lobster decrease as a result of fishery regulations, it might be necessary for the fishers to send fresh fish to Antigua Island and export to the European bloc to maintain their revenues from fisheries. Furthermore, wholesalers and exporters on Antigua Island are eager to deal with fresh fish from Barbuda Island, as there is demand in Antigua Island and the European bloc. Therefore, if the limitations on the ice machine, the refrigerator, and the transport disappear, and the fishers' perceptions change, there is a possibility to shift to fresh fish fishery in the future<sup>25</sup>.

### 3.3.2 Qualitative Effects (Other Effects)

#### (1) Strengthening of fisheries administration, including the establishment of fisheries statistics

This project was expected to strengthen fisheries administration, including the establishment of fisheries statistics. Transactions between fishers and distributors at places for receiving goods have been recorded by handwriting. Since computers were introduced in 2014, records have been input and restored as electronic files. However, computerization of past data has been delayed.<sup>26</sup> According to interviews with the Facility Director and

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<sup>23</sup> Other types of fisheries than lobster fisheries assumed for this project was single-day fishing trips outside of lagoons. It was planned to catch more than 19 tons per year through this project's fisheries facilities. Because no record on catches has been established, details are unknown. According to interviews with fishers, they catch fish for their own consumption and consumption on the island. In addition, an increasing number of fishers catch and sell fish when the lobster season is closed. Several of them bring their fresh fish using fishing boats or ferries to the fresh fish market held on weekends at Antigua Island. However, these fishermen spearfish. This is not suitable for transport or export because the fish is injured, devalued, and perishable. In addition, the fish is not kept under appropriate sanitary conditions. For example, scales are removed by the roadside.

<sup>24</sup> In Antigua and Barbuda, facilities in Point Wharf on Antigua Island and other facilities and equipment were constructed to satisfy HACCP sanitary standards. For the facilities to be judged as having satisfied them, it is necessary to pass the EU health authorities' inspections on both islands in the future. In addition, because a private company's ferry that had been assumed as the means for transporting fresh fish to Antigua Island sank and stopped operating, there was no appropriate transport means at the time of the ex-post evaluation.

<sup>25</sup> There is an example that when there is a market and the investment for the alternative fishing is minimum, fishers diversify their fishing, i.e. the conch fishing for export to the United States (See footnote 22).

<sup>26</sup> Computers were introduced in 2014. The records before that have been input little by little by a young technical officer of the fisheries facilities.

technical workers of the fisheries facilities, this project's staff members have been dispatched to three landing places outside of the Codrington area<sup>27</sup> upon a rotation system to ask fishers about the volume of unloaded fish.<sup>28</sup> However, data on transaction records are incomplete because of the following: it takes 20 to 30 minutes to go there; fishing boats enter ports at various times; cooperation has not been received from fishers; and the technical workers do not know how to collect data. Moreover, because the Fisheries Division's staff members visit Barbuda Island four to seven times a year, there are only limited opportunities for giving technical guidance to the local staff. Therefore, it is difficult even to manage fisheries administration appropriately. Compared with the situation before this project, when there were no fisheries facilities, it became possible to collect information, manage documents, and hold lectures for fishers continuously, showing some improvements. However, as described above, the effect of the strengthening of the fisheries administration is judged to be limited.

### **3.4 Impacts**

#### **3.4.1 Intended Impacts**

Through the continuous effective use of fisheries resources, this project was supposed to contribute to the development of the fisheries industry in Antigua and Barbuda. Concretely, this project was supposed to contribute to a reduction in the pressure on the fishing of lobster, alleviation of the shortage of marine products on Antigua Island, promotion of appropriate management of fisheries resources, and development of small-scale artisanal fisheries on Barbuda Island through the improvement of fisheries technology, resources management, and safety management.

##### **(1) A reduction in the pressure on the fishing of lobster**

A shift from lobster fishery to other types of fisheries was expected to prevent excessive dependence on lobster resources and promote continuous effective use of resources. However, the transport of fresh fish to Antigua Island and its export to the European bloc have still not begun, and such a change has not been seen at the time of the ex-post evaluation.

##### **(2) Alleviation of the shortage of marine products on Antigua Island**

As described above, fresh fish has not been exported to Antigua Island through this project, and it cannot be confirmed that this project has contributed to the alleviation of the shortage of marine products.

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<sup>27</sup> They refer to the unloading places in Coco Point, River Port, and Spanish Point.

<sup>28</sup> This refers to a survey for official unloading records to be submitted to the Fisheries Division.

### (3) Promotion of appropriate management of fisheries resources

It was expected that the establishment of fisheries statistics would progress mainly at this project's facilities, and appropriate management of fisheries resources would be promoted by the use of the statistics. As described above, the establishment of fisheries statistics has hardly progressed, and such statistics have not been used for the management of fisheries resources. By contrast, because lobsters smaller than the specified minimum size and lobsters with eggs are excluded when inspection is conducted before export through this project's facilities, fishers began to strictly observe the prohibition of overfishing lobster. In this way, although the route is different from the planned one, a contribution to the sustainable use of lobster resources can be seen.

### (4) Contribution to the development of small-scale artisanal fisheries

According to an interview with JICA's fisheries expert, although new type of fisheries technologies, such as floating fish reef, have been introduced on Antigua Island, the introduction of such technologies has still not begun on Barbuda Island. With regard to the management of resources, although the regulation of fisheries began with the support of an international NGO, it was confirmed as a result of a field survey that the regulation has no direct connection with this project.<sup>29</sup> With regard to safety management, according to interviews with the Facility Director, after VHF wireless equipment was installed, fishing boats that had engine failure or ran out of fuel were rescued three or four times a year.

Therefore, although this project seems to have contributed to the management of lobster resources and the safety management of fisheries, the effect of this project was not well confirmed.

## 3.4.2 Other Impacts

### 3.4.2.1 Impact on the Natural Environment

This project is an EIA project because it is accompanied by the construction of a port and wastewater treatment facilities. However, because the contents of the cooperation preparation survey report prepared by JICA are similar to those of an EIA report, the Development Management Office, which has jurisdiction over EIA, judged it unnecessary to submit an EIA report separately.

In this project's facilities, wastewater is produced from the processing of fresh fish and

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<sup>29</sup> The Barbuda Council enacted the Fisheries Regulation Act based on the results of an ecosystem survey of coral reefs in 2013 with the technical cooperation of the Waite Foundation, an international NGO. The main contents of the Act are the prohibition of capturing scaridae and sea urchin, the prohibition of casting fishing nets within 65 feet of a coral reef, and the setting of two years' grace period until the prohibition of fishing within the lagoon in the Codrington area.

the toilets in the fishers support building. The facilities face a lagoon designated as a national park. Because of this, wastewater treatment facilities that satisfy the wastewater standards adopted by East Caribbean countries were constructed.

At the time of the defect inspection, because the transparency of the sedimentation basin is sufficiently high, it was judged that there was no possibility that waste and dirty water could flow into and pollute the lagoon. This situation remained the same when visual observation was made at the time of the ex-post evaluation. Because fresh fish is not processed, wastewater emissions are about a half of the planned emissions and the wastewater treatment facilities seem to have been working without any particular problem. Around the unloading place, fixed-point observation of water quality has been carried out twice a year. No marine pollution has been found so far.

Antigua and Barbuda were responsible for restoring the mangrove removed by this project. Although forestation was carried out after the completion of the facilities, it failed because goats ate the trees. Aside from this, a charity organization in Barbuda Island provides seedlings free of charge and local junior high school students are planting trees at the same place three times a year as an extra-curricular activity. Although it takes ten years to grow mangrove on a tideland, such forestation is expected to continue in the future.

No serious impact on the other natural circumstances has been found, such as accretion of sand.

#### 3.4.2.2 Land Acquisition and Resettlement

It was confirmed from questionnaire answers and interviews with the Chief Fisheries Officer of the Fisheries Division that because the lot used for this project was public land and no resident lived there, there was neither resettlement nor land acquisition.

#### 3.4.2.3 Other Impacts

Other positive impacts include an increase in the number of residents who use the street in front of the gate of this project's facilities and an increase in the number of customers of neighboring restaurants. Although a total of 1.3 billion yen was used for a project on a remote small island with a population of 1,625 where everyone is directly or indirectly dependent on fisheries which is one of the major industry of the Island, the direct beneficiaries were 70 fishers and 30 new employees only. The impact of this project for the other islanders does not seem to expand, except for occasional use of the training room for various public meetings. According to interviews, residents in the Codrington area and people engaged in fisheries hope for facilities that can be used for various other purposes, such as refuge from hurricanes.

No undesirable impact has been reported.

As described above, this project's facilities have not been used fully and have made limited contributions to the improvement of the efficiency of fisheries. The facilities have never been used for landing fresh fish or transporting fresh fish off the island. The establishment of fishery statistics hardly seems to strengthen the fisheries' administration. Contributions cannot be seen concerning a reduction in the pressure on the fishing of lobster or alleviation of the shortage of marine products on Antigua Island. In addition, there is only a small contribution to the development of small-scale artisanal fisheries on Barbuda Island through the improvement of fisheries technologies, resources management, and safety management.

This project has achieved its objectives at a limited level. Therefore, effectiveness and impact of the project are low.

### **3.5 Sustainability (Rating: ①)**

#### **3.5.1 Institutional Aspects of Operation and Maintenance**

Under this project, the fisheries complex was to be operated directly by the Fisheries Division, in the same way as the other three complexes set up in the country. Specifically, under the Fisheries Division's Coordinator for Fisheries Complexes, officers of the Barbuda Fisheries Office (Fisheries Branch of the Agriculture Committee of the Barbuda Council) were intended to form an operational structure. The complex was to be assigned a facility director, a frontline manager of the fisheries facility, and eight or nine employees under him/her.

The facility director is appointed by the Barbuda Council. After two former directors were replaced for political reasons, the third director was in office at the time of the ex-post evaluation. The change of directors within a short interval resulted in lack of consistent management policy. In addition, many defects and omissions were found in the operation records for the tenure of the second director, from September 2013 to August 2014. Since being appointed in September 2014, the current facility director, a technical official, has been working to solve these problems.

At the time of the ex-post evaluation, as seen in Table 5, the fisheries facility was assigned triple the number of personnel originally planned. For the facility, all employees are selected by the Barbuda Council, which bears personnel expenses for them. An on-site inspection of their attendance revealed that there were some who had in fact failed to come to work, or had come but neglected to work, suggesting low morale. With no tool for determining on-duty hours, such as time cards, the facility pays the whole amount of wage even for days on which they fail to come. As seen in the facts that employees are

transferred and replaced by someone newly hired every time power is handed over between parties, and that technical officials who have received training at the Fisheries Division and acquired experience there to play a key role are soon forced to leave, the facility fails to assign people to positions according to their competence.

What has been described above suggests that the fisheries facility constructed under this project, in practice, is exploited by the Barbuda Council as part of its employment promotion measures. Frequent changes of the facility director and key officials, together with assignment of personnel with little consideration given to their competence, hinder them from enhancing their capacity or accumulating skills with technical assistance provided by the Fisheries Division. Under such circumstances, it is unlikely that the facility is used in a manner that suits the purposes of the project. Concerned about that, the Fisheries Division repeatedly asked the Council to take action, but the Council has yet to show any clear intention of improving the situation. As seen above, much needs to be improved in the operation and maintenance arrangements for this project.

Table 5: Fisheries Office of the Barbuda Council: Personnel Plan and Actual Results

Position	Plan	Actual (2015)
Facility Director	1	1
Assistant Director & Accounting Officer	1	1
Office clerk	1	6
Caretaker staff	1	7
Janitorial staff	1	6
Technical official	3	7
Workers	1 - 2	3
Total	9 - 10	31

Source: Data provided by JICA; Barbuda Fisheries Office

### 3.5.2 Technical Aspects of Operation and Maintenance

During the construction period, this project was assigned a refrigeration engineer, an employee of the Barbuda Fisheries Office. He received guidance from Japanese engineers on how to operate the equipment. As manager, the engineer has since been in charge, with no replacement, continuing day-to-day inspection and maintenance of the equipment. The Fisheries Division has a senior engineering manager in charge of the four fisheries complexes in the country. When the fisheries facility of this project undergoes a regular inspection or needs repair, he visits the facility to deal with the work, and an established system is in place for that. As the senior engineering manager has long been in charge of technical affairs for maintenance of fisheries facilities provided by JICA, and took part in training seminars in Japan, there seems to be no problem with his/her technical competence. Employees of the project facility are provided with sufficient on the job training (OJT) by

senior engineers based in Antigua Island on an as-needed basis. Manuals are kept by the refrigeration engineer mentioned above, and used by engineers of the project facility for maintenance and repair. These facts suggest that there is, and will be, no specific problem in the technical aspects of operation and maintenance of the facility and equipment, as long as the current on-site engineering managers continue to be in service.

### 3.5.3 Financial Aspects of Operation and Maintenance

When the plan was formed, it was supposed that electricity charges and expenses for personnel employed by the Barbuda Council for the facility would be paid by the Council, and that the other operating expenses would be shouldered by the Fisheries Division. However, interviews with the Agency and the Council have revealed the latter bears all expenses for the facility. It was also assumed that use fees and other revenues for the facility would go to the Agency, but it has turned out they are received by the Council as its income. That is, under the current financial arrangements, the fisheries facility is operated and maintained fully under the responsibility of the Council<sup>30</sup>.

Table 6 shows budget spending of the Agriculture Committee of the Barbuda Council, and its Agriculture Office<sup>31</sup>, and Fisheries Office between 2011 and 2014. Since 2012, when this project was completed and came into full-scale operation, budget spending for the Barbuda Fisheries Office had been increasing. However, the Council has seen its financial resources squeezed in recent years with decreased income after the discontinuation of sand mining, and increased spending for hiring new public employees as part of its employment promotion measures, resulting in several-month delays in salary payment. This demonstrates that the organization faces serious challenges to address in financial aspects<sup>32</sup>.

The fisheries facility keeps accounting records in the form of paper-based ledgers and receipts, but it has no computer to input and aggregate them, and income and spending data summarized by year and/or item were unavailable. Table 7 shows income of the facility in 2012 and 2013 which the external evaluators calculated by themselves using the accounting

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<sup>30</sup> Asked about what had caused the differences, the Chief Fisheries Officer who had been in charge since the preparation phase of this project until the time of the ex-post evaluation answered that the current financial arrangements had been in line with a consensus between the Fisheries Division and the Barbuda Council. She also said that she did not know why the scheme described above had been included in the cooperation preparation survey report.

<sup>31</sup> In the administrative hierarchy, the Agriculture Office stands at the same level as the Fisheries Office, equivalent to the Fisheries Agency of Japan, and the two constitute the Agriculture Committee, comparable to the Ministry of Agriculture, Forestry and Fisheries of Japan.

<sup>32</sup> The Barbuda Council is funded mainly with subsidies granted by the State. In addition, the Council has revenues such as license fees from sand mining, a major industry in the island, and tourism. However, the income has been decreasing since 2012, when sand mining was suspended because of depletion of resources, and tourism heavily suffered from hurricanes which left tourist facilities damaged. Neighboring countries have also seen their tourism sector severely hit, with decreased income from export of live lobsters.

records available<sup>33</sup>. Most of the actual spending is recorded in written or printed form, such as receipts, which made calculation difficult to perform for both years.

Table 6: Agriculture Committee of the Barbuda Council: Budget Spending

	Actual			Forecast <sup>34</sup>
	2011	2012	2013	2014
Agriculture Committee, Barbuda Council	1,785,540	2,143,780	2,034,290	3,678,160
(1) Barbuda Agriculture Office	1,358,770	1,340,730	1,366,040	2,623,620
(2) Barbuda Fisheries Office	426,780	803,050	668,260	1,054,540

Source: Interview with the Antigua Council

Table 7: Fisheries Branch of the Barbuda Council:  
Annual Income Plan and Actual Income

Item	Planned	Actual	
		2012	2013
Sale of ice for fishing	20,404	9,779	4,595
Sale of ice for fresh fish distribution	9,374		
Rent from lockers	14,400	1,505	2,600
Mooring charge	6,720	290	50
Slipway fee	1,440	0	0
Workshop lease	7,200	0	0
Lease charge from fishing gear sales floor	10,000	0	0
Health certificate issuance fee	50,000	14,032	27,479
Handling certificate issuance fees	9,500		
Others (oxygen cylinder)	—	11,810	11,810
Meeting room fee	—	0	0
Ice box use fee	—	40	40
Total (% of plan)	129,038	37,456 (29%)	46,574 (36%)

Source: (Planned) Data provided by JICA; (Actual) Calculated based on data provided by the Fisheries Division

The Barbuda Fisheries Office, which manages the fisheries facility, was forecast to spend an annual total of 394,000 EC dollars; personnel expenses of 251,000 EC dollars, electricity charges of 109,000 EC dollars, and the remaining 34,000 EC dollars for other operation and maintenance expenses<sup>35</sup>. Under the plan, the personnel expenses and electricity charges would be appropriated from the Barbuda Council's budget, and the

<sup>33</sup> An interview with the director of the fisheries facility and inspection of books performed by the evaluators have demonstrated that there are many omissions in ledgers for the period between September 2013 and August 2014, the tenure of the second facility director, suggesting the possibility of less income having been recorded than was actually obtained. The facility income for 2014 is not indicated here because of likely under-reporting.

<sup>34</sup> The 2014 forecast is an estimate due to the fact that it has not been calculated yet.

<sup>35</sup> The other operation and maintenance expenses include those for repair, purchase of spare parts, office supplies, water-purification tanks, and water treatment-related equipment.



remaining operation and maintenance expenses would be fully paid for by the income generated by the fisheries facility (annual 129,038 EC dollars under the plan).

Actual income recorded as obtained by the fishery facility in 2012 and 2013 stands around only 30% of the plan, though it is large enough to cover “other operation and maintenance expenses.” With little deterioration seen in the facility and equipment because of low utilization, at least the field visit found no obvious lack of maintenance for the facility resulting from shortage of financial resources.

In the basic design, the income and expenditure plan mentioned fees from issuance of health and handling certificates as a main source of income. However, the low number of certificates being issued resulted in much less income than planned. Income from sales of ice also ended up being far smaller than planned, though the reason is unclear<sup>36</sup>. Facility use fees, another important source of income, produced only a small amount of income as facility utilization was low, and there was trouble collecting fees from fishermen for their lockers despite their high rate of utilization<sup>37</sup>. Meanwhile, the refilling of cylinders with air for scuba divers fishing lobsters turned out to be a good source of income, generating unexpected revenues.

As seen above, this project experienced no serious shortage of financial resources that might hinder maintenance of the fisheries facility, though several challenges have been found, such as lack of appropriate accounting management, and a smaller collection of charges for facility use and rents for lockers used by fishermen than planned. This leads the evaluators to conclude that the project has problems in operation and maintenance in financial aspects.

#### 3.5.4 Current Status of Operation and Maintenance

The field study has found the landing pier, seawalls, slipways, and other facilities are well maintained. The lavatory and the administrative and fishermen assistance buildings are cleaned up daily. Lockers for fishermen, despite being in regular use, are kept in good condition, with little damage seen on them. The audiovisual equipment is used effectively, and is provided with good maintenance.

The ice-making machine experienced two breakdowns of its compressor in 2014, and was shut down for some six months in total before each was fixed. When continued fluctuations in voltage, a major potential cause of trouble, are observed, the machine is

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<sup>36</sup> In 2013, for instance, the unit sales price of ice stood at around 0.5 EC dollars per kilogram, higher than planned, at 0.3 EC dollars, while the output, estimated based on operating hours, turned out to be a little larger than planned (Table 3), though sales income on the record accounted for only 15% of the plan, suggesting absence of appropriate recording and accounting.

<sup>37</sup> For a period before commencing this project, the Barbuda Council made election pledges to make the facility available for free of charge, which made it common for fishermen to refuse to pay. Despite the public commitment made by the previous administration, the Director of the facility and the Chair of the Agriculture Committee of the Council recognize the importance of collecting charges.

brought to a halt. When the field study was conducted in May 2015, both of its two cooling fans were broken, forcing the ice maker to halt operations until replacement parts were obtained. According to a senior engineer of the Fisheries Division, replacements are procured by the Barbuda Council, with support provided by the Division, which offers the Council information needed in adopting some equipment and examining suppliers, on an as-needed basis. Thus he insisted there is no problem seen in the procurement mechanism for spare parts.

As shown above, the fisheries facility of this project, despite some problems found in maintenance of the ice-making machine, is maintained in generally good condition with regard to the rest of its equipment.

In light of the above, major problems have been observed with regard to the maintenance scheme for the fisheries facility of this project. No specific problems can be seen in technical aspects, either maintenance technique or engineering personnel, but there are some challenges to address in financial aspects and in operation and maintenance of some equipment. Therefore sustainability of the project effects is low.

## **4. Conclusion, Lessons Learned and Recommendations**

### **4.1 Conclusion**

This project was carried out in Barbuda Island, Antigua and Barbuda, to develop fisheries infrastructure, including a landing jetty, mooring wharf, slipway, and distribution facilities, such as ice making and water storage equipment. This was to improve the efficiency of its fishery sector and distribution of its marine products in a sanitary manner as an attempt to increase fishery production, thereby contributing to the development of its fishery industry by way of sustainable and effective use of its fishery resources. Both at the time of the planning and that of the ex-post evaluation, this project was highly consistent with the development policy of the country and priority areas in Japan's aid policy, and met the development needs the country had in the fisheries sector. Meanwhile, the project did not necessarily serve what local fishermen recognized as their needs, suggesting that it got started before building a firm consensus among the parties concerned. Therefore its relevance is fair. Although the project cost was within the plan, the project period exceeded the plan. Therefore, efficiency of the project is fair. The fishery facility of this project was underused, with only limited contribution made to efficiency of the fisheries sector, and utilization of the facility for landing fresh fish and/or shipping it off the island in a sanitary manner had yet to come to realization. In addition, only minor contributions were made to sustainable and effective use of fishery resources. Thus, effectiveness and impact of the

project are low. In terms of operation and maintenance for this project, no specific problem has been found in technical aspects. However, the facility staffs were assigned after little consideration was given to the necessity and their competence, and there were serious problems in its operation and maintenance. In addition, some problems were observed in financial conditions of the project facility, and in maintenance of some of its equipment, therefore, sustainability of the project effects is low. In light of the above, this project is evaluated to be unsatisfactory.

## **4.2 Recommendations**

### **4.2.1 Recommendations to the Implementing Agency**

While constructed for distribution of fresh fish to promote the fisheries industry of Antigua and Barbuda, the fisheries facility of this project is not fully used for that purpose. The fundamental cause could be the lack of mutual understanding of the issues in Barbuda's fisheries sector, the necessity of the project, and operation and usage of the fisheries facility among the stakeholders. For instance, it was found that the sense of urgency regarding export of fresh fish to the EU zone as well as ideas about sustainable use of fishery resources (such as lobsters) felt by Fisheries Division of the Antigua and Barbuda government has not been fully recognized by the Barbuda Council and fishermen there. Another factor is the fact that the Fisheries Division has not necessarily been able to function effectively enough to instruct the Council to make good use of the facility.

In the light of above, under the guidance of the central government, the Fisheries Division and the Council should quickly invite stakeholders to sort out challenges they should address for the fisheries sector of Barbuda from a broad standpoint, and re-formulate plan to use the project facility in an effective manner and work together to solve the challenges. Then the Fisheries Division and the Agriculture Committee of the Council, carefully considering what they will be able to carry out with a limited budget, should formulate an action plan that specifies people in charge, budgets, priorities, and timetables by July, when the budget is compiled for the next fiscal year. It is necessary to encourage the Fisheries Division and the Council to establish a cooperative relationship in pursuit of common objectives, examining a possibility of greater authority given to the Barbuda Branch Office of the Fisheries Division for management of the fisheries facility of this project, including personnel affairs. By October, when the next-year budget comes into effect, the Division should also develop a system that enables it to work in a more responsible manner. No government budget has been authorized for beds and bedding to be used in the accommodations of the facility, though the Chief Fisheries Officer of the Division has filed applications repeatedly. The government should act more quickly to authorize the appropriation.

#### 4.2.2 Recommendations to JICA

To support the implementing agency carry out recommendations stated above, it would be worth considering whether JICA should conduct a technical assistance project as a follow-up action by dispatching a combination of short-term technical experts in the field of organization enhancement and governance, distribution, and others. Specifically, JICA may dispatch short-term experts as part of the Caribbean Fisheries Co-Management Project, a technical assistance project now underway<sup>38</sup>.

#### 4.3 Lessons Learned

(1) Common understanding between parties concerned about operation and use of the facility, and a system for their cooperation

The project was perceived in different ways by the Fisheries Division, the Barbuda Council and the fishermen, and the Council had difficulty in operating the facility in an appropriate manner. These are two fundamental factors that hindered the facility from being used effectively and the project from producing results. When a project has different entities as an implementing agency, operator of facilities, and user, it is important to make a start on it only after these parties have reached a common understanding of what the project is for and why it is necessary, and have achieved a consensus about a system of cooperation for appropriate operation and use of the facility. When an entity highly independent of an implementing agency, like the Council for this project, is engaged in management of a facility, it is especially important that detailed assessment be conducted at the time of planning to discern whether any written agreement or other mechanism is available to ensure appropriate operation of the facility in a manner that meets the purposes of the project. This will allow JICA to determine whether the project is feasible. Also, if JICA considers at the time of planning that an implementing agency is prevented by political instability from serving appropriately to fulfill administrative functions, it should reconsider the plan in its entirety.

(2) Provision of spare parts for maintenance after construction

For this project, after the compressors failed, it took three months to obtain necessary parts, leaving the ice-making machine operations suspended during the period. Unstable electric voltage supplied by a power plant operating in Barbuda Island, may cause repeated failures of the compressors and other equipment in the facility. A generator provided as

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<sup>38</sup> At the time of the ex-post evaluation, two long-term dispatch experts were working for six Caribbean states (Antigua and Barbuda, Dominica, Saint Lucia, Saint Vincent and the Grenadines, Saint Kitts and Nevis, and Grenada) to introduce to the countries the fishing of large-size pelagic fish using floating fish reefs for promoting organization of fishermen. Given their current work volume, it appears that it would be difficult for them to engage in this project.

part of this project has been brought into operation only in emergency because of operating costs. As seen here, repairs after construction may cost a recipient country much, thus offsetting benefits produced by a project. Therefore, with regards to mechanical equipment and materials that JICA provides to recipient countries, it should take into consideration that island countries have a higher concentration of salt and minerals in groundwater than others, and offer a sufficient number of spare parts for components such as compressors for ice-making machines and refrigerators, which are equipment that may fail especially frequently. It is desirable to provide enough parts to last for around six years after completion of a facility, depending on their statutory durable life.

### (3) Facility planning that allows local people to make effective use of a facility

This project was carried out on Barbuda Island, an isolated island with a population of 1,625, where everyone is directly or indirectly dependent on fisheries, less than 100 fishermen benefit directly from the construction of the facility. However, a training room in the fisheries facility constructed for the project has been used for various public meetings, which indicates a growing range of beneficiaries beyond fishermen. Equipped with a power generator, strong buildings may be used as shelter and/or storehouse for disasters, granted that it meets the requirements for use as such. Communities of small-scale fishermen, prone to hurricanes and other natural disasters, generally have some vulnerability in socio-economic infrastructure, which makes it natural for local people to hope, when any facility is built, they will make the most of it for social and economic development of their community. Efforts to spread effects of a project over various areas, beyond the fisheries sector, should add to its impact on development. Therefore, before carrying out a project to construct a facility with a generator and/or a meeting room, a study should be performed to examine whether it should be designed to be available to local people for more than one purpose. Specifically, the Japanese side may well establish a common understanding that while any fisheries grand aid project should have some facility related directly to fisheries business as its central element, it may also have others that meet needs of the local community, and the understanding should be communicated to a recipient country. In addition, at the time of planning, it would be worth considering, after holding interviews with local governments, residents, and other stakeholders, whether any related facilities helpful for them, such as large-size rainwater tanks and filtering equipment, and food storage and/or radio communication facilities as a preparation for disasters, could be included in the range of the project to add more value to the project facility, promote the use of the facility, and help boost a project's development impact.